AMENDMENTS TO THE CLAIMS

1. (Original) An apparatus for providing a regenerated data sequence, said apparatus comprising:

a channel identification unit receiving, from a communication channel, a transmitted signal ($\tilde{r}$) and a training control sequence (p^{train}) to provide a plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$); and

a channel modeling unit filtering said plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$) with a known training data sequence (X) to provide said regenerated data sequence (Y).

2. (Original) The apparatus as claimed in claim 1, wherein said training sequence (X) comprises said training control sequence (p^{train}), further wherein said regenerated data sequence (Y) comprises a regenerated control sequence (r^{pilot}), further wherein said channel modeling unit comprises a channel control modeling unit filtering said plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$) with said training control sequence (p^{train}) to provide said regenerated control sequence (r^{pilot}).

3. (Original) The apparatus as claimed in claim 2, further comprising a control signal cancellation unit, subtracting said regenerated control sequence (r^{pilot}) from said transmitted signal ($\tilde{r}$) to provide a control sequence free ($r^{pilot\,free}$) of said control sequence.

4. (Original) The apparatus as claimed in claim 1, wherein said training sequence (X) comprises a training data sequence (b^{train}), further wherein said regnerated data sequence (Y) comprises a regenerated training sequence (r^{train}), further wherein said channel modeling unit comprises a channel data modeling unit filtering said plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$) with said training data sequence (b^{train}) to provide said regenerated training sequence (r^{train}).

5. (Original) The apparatus as claimed in claim 4, wherein said channel modeling unit further comprises a channel control modeling unit filtering said plurality of channel coefficients representative of said communication channel ($\tilde{h}_1 ... \tilde{h}_k$) with said training control sequence (p^{train}) to provide a regenerated control sequence (r^{pilot}).

6. (Original) An indirect adaptation receiver for providing an estimated payload data sequence ($\hat{b}$), said receiver comprising:

an apparatus for generating a regenerated data sequence free of said control sequence comprising:

a channel identification unit receiving, from a communication channel, a transmitted signal ($\tilde{r}$) and a training control sequence (p^{train}) to provide a plurality of channel coefficients representative of said communciation channel ($\tilde{h}_1 ... \tilde{h}_k$); and

a channel modeling unit filtering said plurality of channel coefficients representative of said communication channel ($\tilde{h}_1 ... \tilde{h}_k$) with said training control sequence (p^{train}) to provide regenerated control sequence (r^{pilot});

a control signal cancellation unit, subtracting said regenerated control sequence (r^{pilot}) from said transmitted signal ($\tilde{r}$) to provide said control sequence free ($r^{pilot,free}$) of said control sequence; and

a filtering unit receiving said regenerated data sequence free of said control sequence and further selectively receiving a training data sequence (b^{train}) to provide said estimated payload data sequence ($\hat{b}$); and

wherein said filtering unit is adapted in accordance with said training data sequence (b^{train}).

7. (Original) A method apparatus for providing a regenerated data sequence, said method comprising:

receiving, from a communication channel, a transmitted signal ($\tilde{r}$) and a training control sequence (p^{train}) to provide a plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$); and

filtering said plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$) with a known training dasta sequence (X) to provide said regenerated data sequence (Y).

8. (Original) The method as claimed in claim 7, wherein said training sequence (X) comprises said training control sequence (p^{train}), further wherein said regenerated data sequence (Y) comrpises a regenerated control sequence (r^{pilot}), further comprising filtering said plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$) with said training control sequence (p^{train}) to provide said regenerated control sequence (r^{pilot}).

9. (Original) The method as claimed in claim 8, further comprising subtracting said regenerated control sequence (r^{pilot}) from said transmitted signal ($\tilde{r}$) to provide a control sequence free ($r^{pilot\,free}$) of said control sequence.

10. (Original) The method as claimed in claim 7, wherein said training sequence (X) comprises a training data sequence (b^{train}), further wherein said regenerated data sequence (Y) comprises a regenerated training sequence (r^{train}), further comprising filtering said plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$) with said training data sequence (b^{train}) to provide said regenerated training sequence (r^{train}).

11. (Original) The method as claimed in claim 10, further comprising filtering said plurality of channel coefficients representative of said communication channel ($\hat{h}_1 ... \hat{h}_k$) with said training control sequence (p^{train}) to provide a regenerated control sequence (r^{pilot}).

12. (Withdrawn) An adaptive method for optimizing the parameters of a filter at a receiver, the method comprises:

using first and second data sequences transmitted through a same communication channel, wherein said first data sequence includes as payload data and said second data sequence includes as training data;

using said training data to adapt the filter parameters at the receiver;

wherein said filter parameters are adapted in presence of varying channels that are received at the receiver at the same time as said data sequences are transmitted.